

ROAD TEST: TRYPHONOS

IT'S RADICAL, BRITISH AND IT'S GOOD!

Striking Tryphonos succeeds where other hub-centre steered bikes fail

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THE radical new hub-centred steering on the British-built Tryphonos gives such incredible handling that it can outrun Yamaha's all-conquering R1 through a set of bends!

Most bikes with hub-centre steering fail to work as well as telescopic forks, but the bizarre-looking Tryphonos proves the technology does work. In fact, it works so well that it out-handles every current road bike in production.

It was designed by London-based firm Performoto. The bike was then extensively developed with the help of MCN road tester and former Canadian superbike champion Peter Wilson.

But to make sure you get an unbiased test we asked some of our other world-class MCN testers to ride the bike on the track at Donington and Snetterton.

In the past the biggest headache riders in the past the biggest headache riders have faced with hub-centred steering has been the lack of feel, particularly under braking, but this problem has been almost completely eliminated on the Tryphonos.

It is miles better than other similar bikes like the British-built ASP superbike, which was criticised for a lack of feel. This £25,000 Yamaha EXUP-powered bike also lost out in the styling stakes.

But the Tryphonos has got it all about right. Corner speed is so impressive you can carry 10mph more through a turn than you ever thought possible.

The suspension is soft to the point that when you sit on the bike it feels more like a tourer than a razor-sharp sports tool. But once out on the track it's a completely different story.

At walking speeds the steering feels slightly odd. The smallest input turns the bike immediately so you have a tendency to over-compensate. But it doesn't take long to get used to it.

The very first corner on the Tryphonos provides the biggest shock you are likely to experience this century on a bike.

You can feel absolutely every little nook, crack and cranny in the surface of the Tarmac. Each bump, undulation and divot is transmitted to you via the bars with such clarity it's almost an information overload.

As the pace increases, the soft feeling of the suspension never disappears, but it never wallows and weaves as you flick the bike into a corner. Get on the gas hard and it just digs in and gets to work. And the rear end, from a Suzuki GSX-R750, works well to balance the bike perfectly.

The radical-looking front end separates

braking force from suspension movement. In the past, hub-centred bikes have managed to separate these forces but at the cost of feedback.

Braking hard into Redgate at Donington, the Tryphonos feels like a normal bike - except you are left in no doubt exactly what the front end is doing because the suspension isn't loaded up on the brakes.

On a normal front end set-up the forks compress under braking. Turning a bike into a corner with the brakes on means the front wheel can't travel as well as most of the suspension travel is used up.

The tight Melbourne Loop at Donington was the only place that feedback was vague, as the hub-centred front end felt like it was pumping down - something that happens when the suspension can't return quickly enough between bumps.

This is the only bike that clearly shows the different feeling between the rear wheel sliding and the rear suspension compressing. Most of the time on a conventional bike the difference between the two sensations is blurred. But not on the Tryphonos.

All this feel is helped by the lightness of the bike, which weighs 160kg (352lb). Getting used to all the feedback takes very little time and it isn't long before you are taking the Suzuki RF900 engine to the red-line in every gear exiting every corner.

The Suzuki motor was chosen because it offers a solid base as a semi-stressed member for the suspension package. It also has a bulletproof reputation.

The engine mounting placements were another reason the RF lump was chosen as they fitted the Tryphonos frame easily.

The Tryphonos can also be built around a Suzuki GSX-R1100 motor for even more power. But the RF lump, with its unique air box and Dynojet kit, still pushes the Tryphonos out of corners with a respectable 126bhp at the rear tyre.

The engine pulls strongly from as little as 4000rpm and stays hard on the gas until a small green rev light comes on to give you the optimum gear-change. Like the road-going Suzuki engine it is very predictable and offers a wide spread of power and torque, letting you go as fast or as slow as you like.

The Tryphonos is the result of eight years hard work by designer Michael Tryphonos. It started life as a university project and has now been followed through to become one of the best-handling bikes in production.

The front end features an adjustable steering head angle that can be moved from 21° to an amazingly steep 35°. That beats the super-steep Suzuki TL1000R



FABULOUS FEEDBACK: The handling of the new Tryphonos is so impressive it even beats the R1 around corners

'The first corner on the Tryphonos provides the biggest shock you're likely to experience this century'

which has a mere 23° head angle. The chassis consists of a huge aluminium twin-spar cradle that holds the engine in place and connects a GSX-R750 rear swingarm and the Tryphonos front swingarm together.

The chassis cradle sits underneath the engine to keep the centre of gravity as low as possible.

A new design of steering linkage using as few moving parts as possible connects the handlebars to the specially-made centre hub and front wheel, which has a carbon-fibre rim. Tryphonos claims the fewer moving

parts in the front linkage the better it works as there is less to flex.

Both the front and rear swingarms are controlled by top-of-the-range Penske shocks. These American units have adjustment for high and low speed compression damping as well as rebound, ride height and pre-load.

The bike is only 42cm (16.5in) at its widest point. This allows the Tryphonos to reach staggering lean angles and not ground out the front swingarm, a problem the Elf 500 GP bike suffered in the late 1990s. Even with the suspension fully compressed the bike can still manage an amazing 65° angle of lean.

It also has a very short wheelbase of 139.5cm (54.9in). That matches the all-powerful Yamaha R1, allowing the bike to turn quickly.

Front braking power comes from two huge PFM six-pot calipers clamping down on a specially made single front disc. This system helps keep the weight of the front end down but still gives good feedback and huge stopping power.

When the Tryphonos hits the streets it will have state-of-the-art headlights plus carbon bodywork and fuel tank.

The road-going version of the bike will be in production in 10-12 weeks and the firm will produce just 40 a year.

Ducati's new 916 could well have a similar steering system when it's released at the end of the century.

HOW CENTRE OF EXCELLENCE WORKS



CENTRE STAGE: Left side of front swingarm

A COMPREHENSIVE set up of linkages and state-of-the-art design give the Tryphonos its super-quick steering and amazing feedback.

The chunky front swingarm and steering system has two rods running above the arms of the front swingarms. The left one steers the wheel through rose-jointed linkages and the second arm locates the hub-centre bearing to maintain rake and trail during suspension movement.

The system helps the bike remain stable under all conditions and gives massive braking potential as it doesn't dive like conventional forks.

The system has been tested in the heat of racing at the ultimate track, the Isle of Man.

An early prototype of the Tryphonos, ridden by Sean Harris, finished 11th in the Senior race in 1995.

The bike was stripped after the race to see how the new front end had stood up to all the bumps over the high speed circuit.

None of the parts needed replacing, proving the reliability and strength of the new system.



REVVING UP: Race-style rev counter



STOP FAST: AP racing rear brake



SOLID SUZUKI: RF900 engine



HUGE BEAST: 310mm brake disc and calipers



SUPER HANDLER: Tryphonos' hub-centre steering gives great feedback under braking



NO CHANCE: GTS's system **STYLISH:** Italjet 500cc

OLD HUBS GAVE BUM STEER!

HUB-CENTRE steering is nothing new, but no manufacturers have made it work well until now.

In the mid-'80s the Elf 500 GP team achieved some success using hub-steered bikes, with Ron Haslam finishing ninth in the world championship in 1986.

The team was helped by Honda, who supplied works 500cc engines in exchange for technical information, before the project was shelved in 1988.

Yamaha put the GTS1000 sports tourer into production in 1993, but only a couple of hundred bikes were sold. There's still a handful kicking around in MCN Bikemart.

Italian company Bimota also tried the concept, but its £23,000 Test is slated for a lack of feel.

The only current hub-centre steering manufacturers are Peugeot, with the Speedlight scooter range, and Italjet, with the Formula 125 and 50. On these bikes the system works well because of the lack of weight, but the companies admit it's a sales gimmick to grab buyers wanting a stylish scooter.



NICE REAR: Swingarm



UP FRONT: Hub steering

SPECIFICATIONS

MODEL	TRYPHONOS
PRICE	£35,999
INSURANCE GROUP (V11, max 17)	16
ENGINE	
TYPE	4-stroke
LAY OUT	in-line four
CAPACITY	937cc
BORE/STROKE	73 x 56mm
VALVES	4 per cyl
VALVE GEAR	dohc
FUEL SYSTEM	4 x 38mm Mikuni carburettors
COOLING	liquid
COMPRESSION	11.3:1
POWER	126bhp @ 10,500rpm
TORQUE	70.7lb @ 7200rpm
TRANSMISSION	
GEARBOX	5-speed
FINAL DRIVE	chain
CYCLE PARTS	
FRAME	alloy cradle underneath engine
FRONT SUSPENSION	hub-centred
Adjustments	Rake, trail, pre-load, rebound and compression damping
REAR SUSPENSION	racing rate monocoque
Adjustments	pre-load, rebound and compression damping
TYRES	
MAKE	Avon
FRONT	120/70 x 17
REAR	190/55 x 17
BRAKES	
MAKE	PFM
FRONT	Single 310mm disc
	2 x 6-piston calipers
REAR	220mm disc
	2-piston caliper
DIMENSIONS	
WHEELBASE	139.5cm (54.9in)
DRY WEIGHT	160kg (352lb)
SEAT HEIGHT	n/a
RAKE/TRAIL	18.21°/85.110mm (3.34.3in)
FUEL TANK	28 litres (4 gals)
GENERAL	
UPDATES	new model
COLOURS	your choice
WARRANTY	n/a
SUPPLIER	Performoto (0181-980-3422)
PERFORMANCE	
TOP SPEED (EST)	165mph
STANDING 1/4-MILE	10.4s @ 135mph
FUEL CONSUMPTION	
AVERAGE	40mpg
BEST	45mpg
RIDDEN HARD	35mpg
RANGE	160 miles
RATINGS	
ENGINE	●●●●○
HANDLING	●●●●○
BRAKING	●●●●○
RIDER COMFORT	●●●●○
FILLION COMFORT	n/a
VALUE	●●●●○



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